



# HAYDITE

The Lightweight Aggregate

## BUILDING UNITS

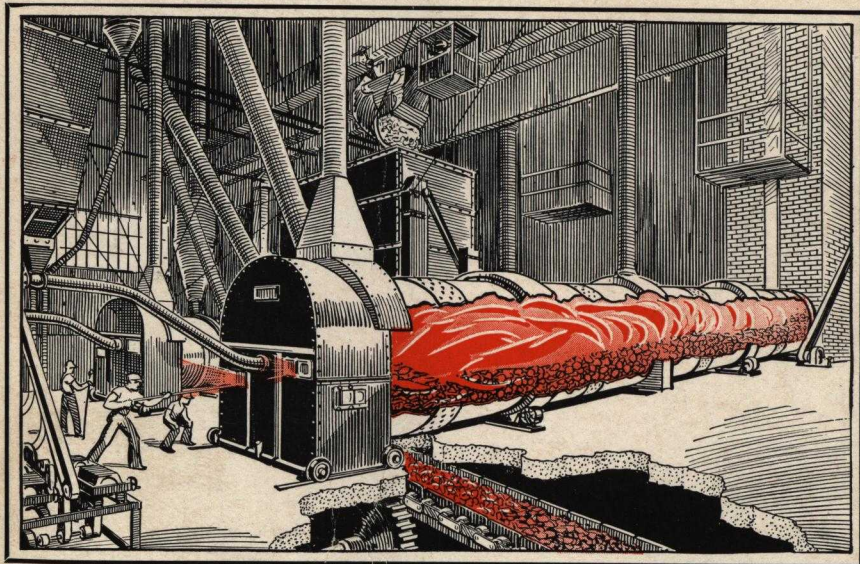
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*Exclusive advantages in building  
construction, combined with lower costs  
. . . a handy manual for contractors*

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# WHAT "HAYDITE" IS ... AND HOW IT IS MANUFACTURED



**Y**OU will appreciate Haydite, the Light-weight Aggregate, better when you know how it is made. The raw material for Haydite is clay or shale of the quality used for high grade brick. This comes from specially tested deposits (all clays are not suitable) and is the only raw material used. The clay or shale, after it is taken from the bank, is first crushed and then is introduced into rotary kilns of much the kind used for making Portland Cement. The raw material travels progressively through the kiln as it revolves, passing through a pre-heating stage and finally reaching a zone of highest heat near the discharge end. *Here the kiln temperature is over 2000° F.* At this point

the material becomes viscous—half melted. Gas is liberated from substances in the raw material, thus causing it to expand into a mass of minute air cells the walls of which are vitrified clay or shale. Even the smallest particles show a completely cellular structure when seen through a microscope. After

crushing, screening and grading (all automatically controlled) the finished product is delivered in the standard commercial sizes used in concrete. This product—Haydite Aggregate—is amazingly light in weight, very strong and one of the best heat and sound insulators. Also—and this is very important—Haydite is absolutely uniform in its properties and has no combustible content.



Microphoto of Haydite fine particles showing completely cellular structure.

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• **Absolute uniformity from Raw Material to Finished Product** •

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# • HAYDITE

## Building Unit Walls—

### how they lead the way to lower costs

**Exclusive combined advantages in strength, fire safety, light weight, plastering and general construction . . . together with savings every builder will welcome**

**I**N this little book we present in brief form the outstanding facts about Haydite Building Units and their uses; handy, practical information to help you in your office or out on the job. But first let us call your attention to a few thoughts about the most important phase of Haydite Unit construction—the one which affects your pocket-book.

Haydite Building Units offer you the thing which every contractor wants—a *method of cutting building costs and at the same time a means of providing construction of superior quality*. Haydite Walls are rated as the finest class of modern masonry. They combine features found in no other single masonry material. Yet they reduce labor in no less than seven important ways and offer a saving in no less than five building materials, as compared with ordinary construction! Perhaps you will say these are bold statements. They are. We mean them to be so. And we can back them up with hard facts and the evidence of practical building experience.

Haydite Walls are a step ahead in masonry construction because in them all of the major values are combined in *one* material. Ordinary masonry walls do the work of load-bearing, backing up facing materials and protecting against fire. In every one of these respects the Haydite Wall is at least equal and in most cases superior to ordinary construction. Furthermore, Haydite Building Units bring the extra values of a plastering surface, a stucco base, a heat insulation, a base for the direct attachment of trim and also a sound deadening system. Because of this, Haydite Walls eliminate unnecessary specialized materials and effect savings which are all the more real because they involve no sacrifice of quality.

Considered as a masonry material only, Haydite Building Units constitute a big improvement. Their large convenient size, light weight and



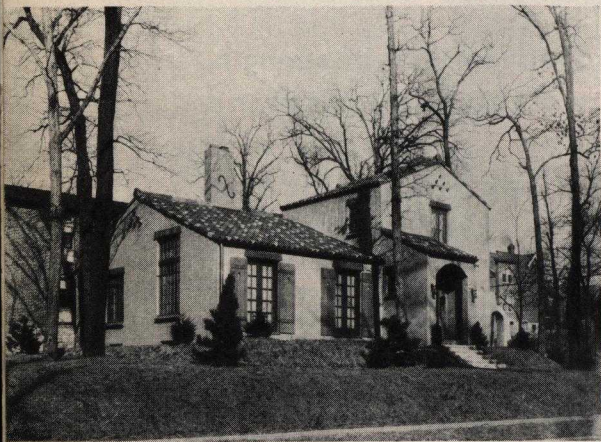
wide mortar bed makes them quicker to lay. (One 8x8x16" Haydite Unit replaces 12 standard brick or more than two 5x8x12" hollow clay tile.) Much less mortar is needed. The wall is true and structurally sound. Breakage and material waste are negligible. You can depend upon a masonry labor and mortar economy that will help you land the jobs and will help your profits equally well.

One of the biggest advantages comes in plastering. You have never known a better plaster base than Haydite Units. Their slightly roughened surface makes the plaster dovetail into the face of the units with an excellent key or mechanical bond and the even suction or absorption not only permits it to harden to a uniform color throughout but holds it

permanently and promotes proper seasoning. Hundreds of experiences show that the unique properties of Haydite, coupled with good masonry construction, make plastering directly on the units sound practice in exterior walls of 8-inch unit thickness or more, and in all partitions. In fact, plastering directly on Haydite Units is approved by architects who insist on furring and lathing for other wall types.

Figure for yourself the money saved in this way. Lath and furring materials and the labor that goes with them are swept off the cost sheet. Down goes the plastering time, for the men find they can work faster on Haydite Units. Plaster quantities are shaved down, too, for the Haydite Wall is so true that only a thin straightening coat is needed. And the best of it is that the finished job is improved and the danger of plaster cracks is reduced to a minimum because of the similar rates of expansion and contraction of plaster and Haydite units.

*Continued on Page 5*



Residence, St. Louis, Missouri  
Stucco Applied Directly to Haydite Units



Apartment Building, Evanston, Ill.  
Haydite Building Units Used for Backup



# Facts About Haydite Units

## • Full Load Bearing Strength

Haydite Building Units, as made by the various authorized concrete products plants, fully meet and usually exceed the strength requirements of local building codes for load bearing walls. They have an average factor of safety at least equal to common clay brick or of hollow clay tile. Uniformity in strength is assured by the perfect control over all manufacturing processes. Extra strength can be obtained where desired by varying the mix in the manufacture of the units, and for columns or pilasters carrying extremely heavy loads, solid units are furnished.

### Typical Compression Test

Made at the U. of Wis. College of Engineering on standard 8x8x16" Haydite Units.

BLOCK No.	AREA Sq. IN.	TOTAL LOAD, LBS.	STRESS, LBS. PER SQ. IN., GROSS AREA
4	127.2	130,580	1030
5	127.6	118,720	930
6	127.2	118,870	935
Av.			965

NOTE: The above tests were made on Haydite Units made to satisfy code requirements of 700-800 lbs. per sq. in. Where codes require 1000 lb. strength, the units furnished usually show average strength of 1200-1300 lbs.

## • Lightest Weight Masonry Walls

The table given below tells the story in a few words and shows that *Haydite Units provide the lightest weight of standard masonry walls*. Wall weights will vary with the local materials, percentages of core space, etc., so these figures should be rechecked with your local Haydite manufacturer who will supply full information.

### Typical Comparison of Wall Weights

These figures apply to 100 sq. ft. of 8" wall, ( $\frac{1}{2}$ " mortar joints). The commonly accepted weights of masonry materials have been used and Portland Cement mortar has been figured at 150 lbs. per cu. ft.

TYPE OF MASONRY	WEIGHT OF MASONRY	WEIGHT OF MORTAR	TOTAL WALL WEIGHT
<b>HAYDITE UNITS (8 x 8 x 16")</b>			
107.4 @ 28 lbs.*	3,007 lbs.	825 lbs.	3,832 lbs.
26 lbs.*	2,792 lbs.	825 lbs.	3,617 lbs.
24 lbs.**	2,578 lbs.	825 lbs.	3,403 lbs.
Hollow Clay Tile (5 x 8 x 12")			
210 @ 16 lbs.	3,360 lbs.	1,200 lbs.	4,560 lbs.
Ordinary Concrete Blocks (8 x 8 x 16") 107.4 @ 50 lbs.	5,370 lbs.	825 lbs.	6,195 lbs.
Common Clay Brick 1271 @ 4½ lbs.	5,720 lbs.	3,000 lbs.	8,720 lbs.

\*See page 8 for Haydite Unit Weights.

\*\*Units with 50% core space.



# Note Important Advantages

## • Unusual Heat Insulating Efficiency

Everybody wants walls that shut out heat and cold, but nobody likes to pay the cost of special insulation. *Such costs are now unnecessary*—for Haydite Unit Walls have such unusual heat insulating value that special materials are not needed. Haydite Building Units, in fact, have the highest insulating efficiency found among standard masonry materials—and by a margin which is well worth taking into consideration. This is due to the unique cellular structure of the aggregate. Haydite Walls keep the building cool in summer and save fuel during the cold months—all without extra construction expense and at no sacrifice of fire-safety. The chart given below, based on authoritative data from Armour Institute of Technology, Chicago and the American Society of Heating and Ventilating Engineers' Guide, gives you a simple practical comparison.

### Comparison of Insulating Values of Unplastered 8" Masonry Walls

#### HAYDITE BUILDING UNITS

Hollow Clay Tile, 5x8x12",  
3 cell,  $\frac{3}{4}$ " shell,  $\frac{1}{2}$ " web,

Hollow Clay Tile, 5x8x12",  
2 cell,  $\frac{3}{4}$ " shell,  $\frac{1}{2}$ " web.

Hollow Clay Tile, 5x8x12",  
2 cell,  $\frac{3}{4}$ " shell,  $\frac{1}{2}$ " web.

Ordinary Hollow Concrete  
Blocks.

Standard Common Brick.

The logical way to judge insulating value is by comparing the efficiencies of materials *in the wall*. The above data is shown this way and is taken from authoritative sources

## • Sound Insulating Partition Walls

To quote Dr. Paul E. Sabine of the Riverbank Laboratories (well known authority on sound) whose data is given here, "Haydite Partition Units show the greatest average number of sensation units in sound reduction of the five leading types of partition materials." Comparative sound insulating values are indicated at right in a condensed way, based on tests covering the whole range of sound frequencies from 128 to 4096 vibrations per second.

4" Haydite Unit and	
1" Gypsum Plaster.....	38.0
2x4" Wood Stud, Wood	
Lath, Plastered.....	29.4
3" Solid Gypsum Tile	
and 1 $\frac{1}{4}$ " Gypsum Plaster.....	34.3
4" Clay Tile and 1" Gypsum Plaster....	35.0
3 $\frac{1}{2}$ " Gypsum Plaster on Metal Lath....	36.1

This shows why Haydite Building Units are preferred for partitions in apartments, hotels, offices, factories and institutions.



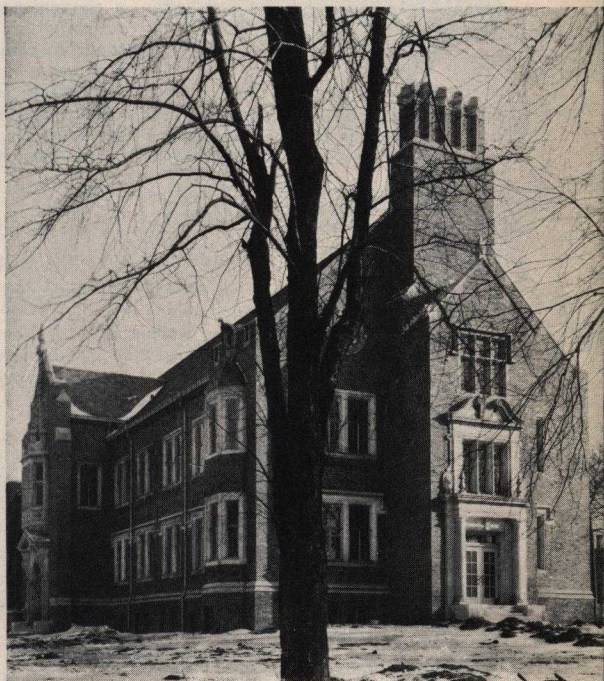
elevator shafts and, for certain classes of buildings, exterior walls. It will even be found that Haydite Unit masonry can be substituted for wood frame construction with little increase in cost—and with far superior value.

Haydite Units also find a valuable use in lightweight fireproof floor construction. Special precast Haydite Floor Units are provided for fillers, and these may be used with ordinary or, preferably, Haydite Concrete. The advantages of this construction begin with a saving of 25% to 30% in weight as compared with ordinary tile joist floors, and also include economy of construction, superior heat and sound insulation, elimination of need for suspended ceilings and plastering economies.

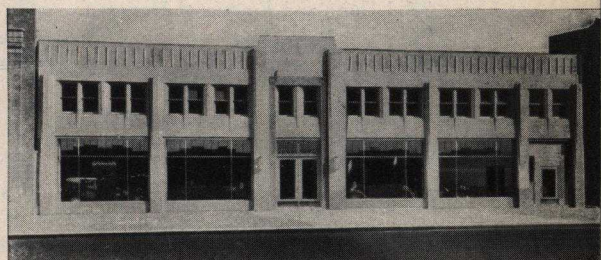
*On practically every point of construction, Haydite Building Units offer you either a money saving or an important improvement of quality—often both!*

We do not say that Haydite Construction is the cheapest there is. There are cheaper ways to build, but among standard load-bearing masonry systems, Haydite Walls are among the very lowest in first cost—and when all of their extra savings and extra values are taken into consideration, you have the ideal combination of economy and superior construction.

The purpose of this manual is to give you reliable and practical information about Haydite Building Units and their methods of use. Keep this book handy and refer to it whenever occasion arises. And, if there is some point on which you want additional facts, call on us and a competent Haydite Specialist will see you promptly.



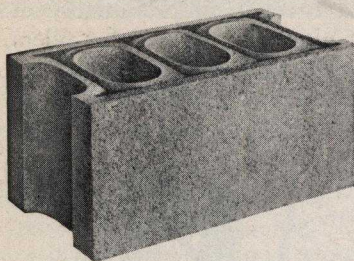
Illinois Wesleyan Music School, Bloomington, Ill.  
Haydite Units Used for Backup and Partitions



W. E. Biggers Salesrooms, Buffalo, N. Y. Haydite Units  
Used for Exposed Walls, Brick Backup and Partitions



# Haydite Building Units



## Information Regarding Standard Sizes and Shapes

Haydite Building Units are offered in the full range of sizes, styles and shapes required by modern building practice. They are made by a large group of authorized Concrete Products plants, each serving a convenient trade area and all selected for their reliability and efficiency. In all cases Units are made to comply fully with local building codes in strength and design. Rigid specifications and close supervision by the Haydite manufacturer assures

uniform high quality. Standard Haydite Units are listed below. Some variations occur in certain territories due to local construction practices, but these are of a minor nature and full information will always be supplied by the local plant.

### 4" Haydite Units

Nominal Size.....	4x8x16"
Actual Size.....	4x7 <sup>3</sup> / <sub>4</sub> x15 <sup>3</sup> / <sub>4</sub> "
(Canadian Actual Size.....)	4x8x15 <sup>3</sup> / <sub>4</sub> "
Weight.....	13-17 lbs.

Used as a backup unit in 8-9" walls and as an independent unit for partitions.

Also made with top almost closed to facilitate spreading mortar, and in Solid and Fractional Units.

### 8" Haydite Units

Nominal Size.....	8x8x16"
Actual Size.....	8x7 <sup>3</sup> / <sub>4</sub> x15 <sup>3</sup> / <sub>4</sub> "
(Canadian Actual Size.....)	8x8x15 <sup>3</sup> / <sub>4</sub> "
Weight.....	26-30 lbs.

(NOTE: Units with 50% core space weigh 22-25 lbs.)

Used as a backup for 12-13" walls and as an independent unit in 8-9" walls.

Also furnished in Header Units, Jamb and Joist Blocks, Special Grooved Jamb Blocks for Steel Windows, Square End Units, Solid Units and Fractional Units.

### 12" Haydite Units

Nominal Size.....	12x8x16"
Actual Size.....	12x7 <sup>3</sup> / <sub>4</sub> x15 <sup>3</sup> / <sub>4</sub> "
(Canadian Actual Size.....)	12x8x15 <sup>3</sup> / <sub>4</sub> "
Weight.....	37-45 lbs.

Used as a backup for 16-17" walls, and as an independent unit in 12-13" walls.

Also furnished in Header Units, Jamb and Joist Blocks, Special Grooved Jamb Blocks for Steel Windows, Square End Units, Solid Units and Fractional Units.

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### Haydite Brick

Actual Size.....	2 <sup>1</sup> / <sub>4</sub> x3 <sup>3</sup> / <sub>4</sub> x8"
(Canadian Size.....)	2 <sup>5</sup> / <sub>8</sub> x4x8 <sup>3</sup> / <sub>8</sub> "
Weight.....	Approx. 3 <sup>1</sup> / <sub>4</sub> lbs.

For bonding brick veneer with Standard Lightweight Haydite Units. Also for closures, nailing brick, mullions, small piers, etc.

### Haydite Lintels

Widths.....	3 <sup>3</sup> / <sub>4</sub> ", 5 <sup>3</sup> / <sub>4</sub> ", 8"
Lengths.....	2'8" to 10'8"
Height.....	7 <sup>3</sup> / <sub>4</sub> "

(In Canada, Lintels are made full 8" high)

NOTE: For 8-9" walls, two lintels 3<sup>3</sup>/<sub>4</sub>" wide are used; for 12-13" walls, two lintels 5<sup>3</sup>/<sub>4</sub>" wide are used.

### Other Sizes and Shapes

In addition to the Haydite Units listed here, there are numerous intermediate sizes (such as 3", 6", 9", 10" and 13<sup>1</sup>/<sub>4</sub>"—also 5x8x12" tile), that are also furnished as standard according to the locality.

### Weight of Units

In the weights given on this page, the variations are due to the fact that shapes of the units and their proportions of "void" or core space differ according to locality. The definite weights which apply in your district will be supplied by the local manufacturer.



# Practical Pointers Regarding Haydite Unit Construction

**T**HERE is nothing about Haydite Building Units that requires any special methods of construction or unusual types of structural design. On the contrary, Haydite construction is simpler and easier. The Units are flexible in their use and are supplied in a complete range of sizes and shapes to handle any structural problem. No special experience or skill is needed by masons or other building mechanics—indeed, the trueness and uniformity of Haydite Units and the simplicity of their use help to offset the human element in building and insures a superior wall without extra precautions. Following are brief instructions on a few of the points which will help you to secure the fullest benefits of Haydite Building Unit cost-reducing masonry construction.

## Laying

All units should be laid in the wall with cells vertical, and in such a manner that the main bearing webs come in proper relation for bearing on those below. No through mortar joints should be used—always interrupted joints (see special note). The best results are obtained in walls above grade when dry, well-cured units are used. It is good practice to sprinkle the mortar surfaces only in hot weather.

## Mortar

It is recommended that a 1-3 mortar tempered with 10 percent hydrated lime (by weight of Portland Cement) be used for laying Haydite Units below grade. For ordinary backup and partition walls, a 1-1-6 cement lime mortar generally gives the best results.

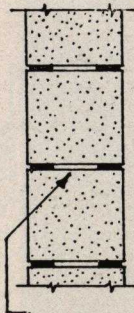
## Bonding

All types of exterior and interior masonry can be laid up quickly and easily with Haydite Building Units. It is possible to handle intricate construction problems without difficulty because of the full range of unit styles, types and sizes that can be furnished. Special size units can always be supplied to order.

## Important!

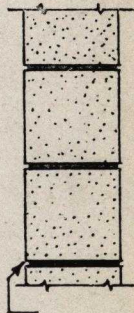
## MORTAR JOINTS

To insure dry walls and good construction mortar joints *must not extend through the wall*. Horizontal and vertical joints should be formed by buttering the two edges of each unit so that the mortar does not extend more than 1½ inches in from the faces of the units, leaving the center clear of mortar. This gives a superior wall and also saves mortar.



**Right**

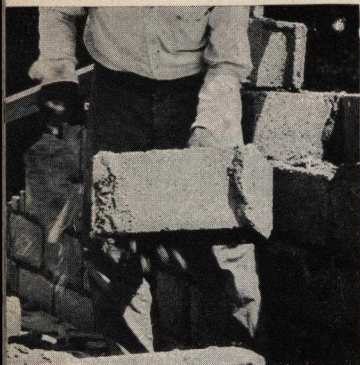
No through joints. Liberal space in center of wall



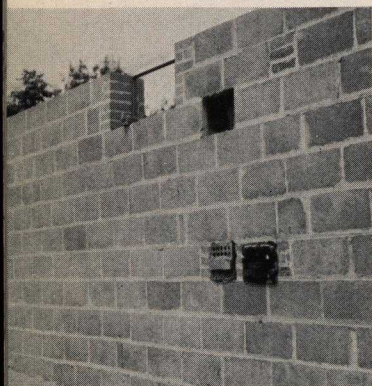
**Wrong**

Mortar extending through wall conducts moisture

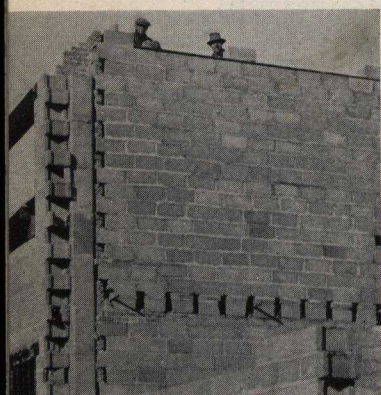




Haydite Units are light and convenient to handle and speedily laid



Typical Haydite Building Unit Wall showing its perfect trueness



Showing fire clay flue enclosed by Haydite Units; also spaces left in wall for insertion of joists

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## Foundation Walls

Excellent economy can be secured by the use of Haydite Lightweight Building Units for foundation walls. The wall, of course, should be waterproofed on the outside with good water-proofing finish, as generally required for first class practice. Special units should be used for corners, offsets and other breaks to maintain a proper bond and insure staggered joints throughout the wall.

*Drainage*, to be adequate, requires the use of a drain tile around the building, connecting to the sewer, and a back fill of gravel or cinders leading to this drain tile so as to prevent the building up of a head of water.

## Load Bearing Walls

All Haydite Units (except special lightweight partition units) classify as load bearing materials, and conform to local code requirements. Where heavy beams, girders or joists bear on the walls, or wherever concentrated loads are applied, the holes or cores should be filled with concrete or the wall may be capped with concrete to distribute the load properly. Solid units may be used instead of filling cores of standard units. Haydite Joist Blocks facilitate the setting of joists into the wall.

## Backing Up Brick, Stone, etc.

Methods are shown by construction details on page 11. Units of less than standard height will be supplied when unusually thin mortar joints are desired.

## Partition Walls

No special construction is required, and the Haydite Standard Unit Wall also provides excellent sound insulation without the use of any special materials. Units should be laid to a true line and plumb and tied to other walls; also wedged against the floor above.

## Bonding Corners

Square-end Haydite Units are furnished for this purpose in all sizes. (See detail on page 13.)

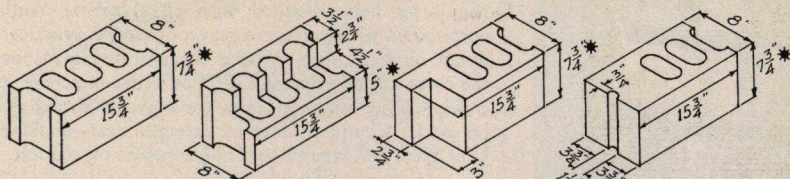
## Windows and Openings

Haydite construction is very simple. Haydite square-end Units, Jamb Blocks and Grooved Units for steel windows and Haydite Lintels facilitate construction. Typical details are shown on page 14.



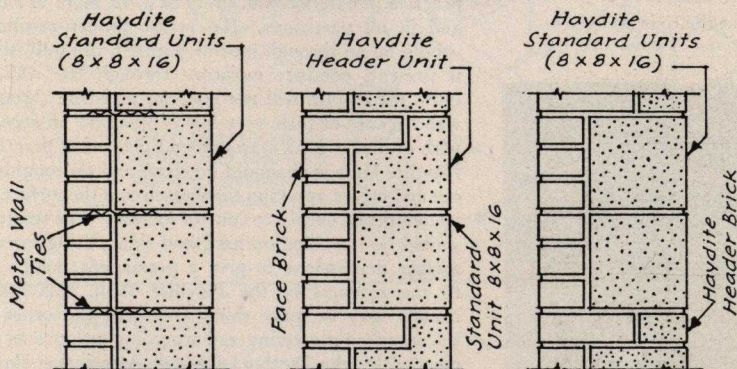
# CONSTRUCTION DETAILS

## TYPICAL 8" HAYDITE STANDARD UNITS



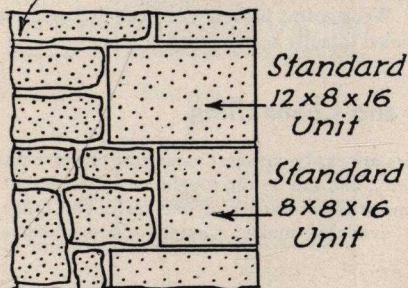
\*Note: In Canada, Units are full 8" in height. Also, in Canadian Famb Blocks the recess sets back  $3\frac{1}{4}"$  from the face of block instead of  $2\frac{3}{4}"$  and recess is  $2\frac{1}{4}"$  deep instead of 3".

## BONDING BRICK AND HAYDITE UNITS



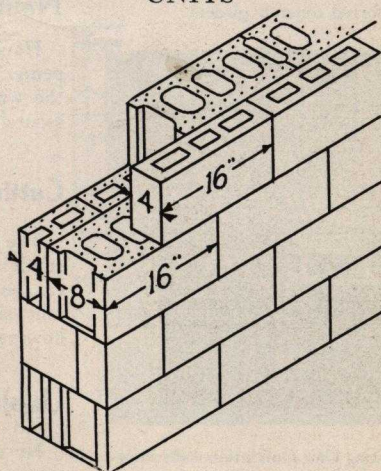
## ASHLAR OR RUBBLE STONE WITH HAYDITE UNIT BACKUP

*Random Ashlar or Rubble Stone Wall*

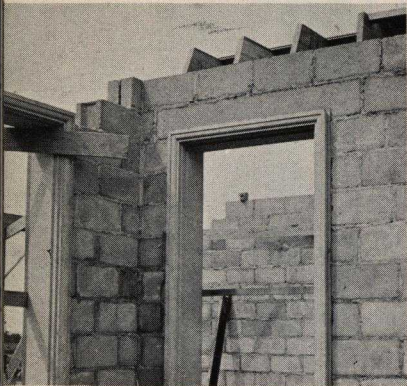


NOTE: Mortar to be spread between stone and Haydite Unit only. No mortar to be placed on webs, breaking through mortar joints.

## BONDING 12" WALL WITH 8" AND 4" HAYDITE BUILDING UNITS



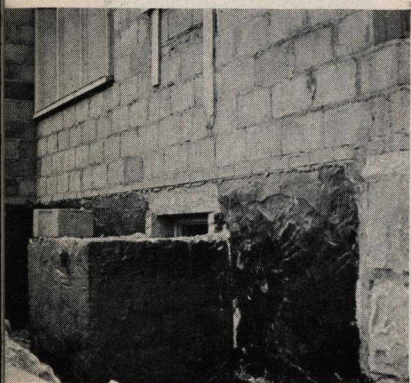




Detail of Haydite Unit Wall showing construction around opening



Haydite Unit piers carrying reinforced concrete girders



Haydite Building Unit foundation walls showing waterproofing coat applied to units

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## Columns and Piers

As Haydite Units are recognized as load-bearing units, they should be used for columns, piers and pilasters, the latter being bonded with the Haydite Walls in accordance with correct concrete masonry practice (see detail on page 13). Where concentrated loads occur, the cores of the units may be filled with concrete or, preferably, Solid Haydite Units (or Haydite Brick) should be used. Complete data on strength tests on Haydite Unit piers and columns will be supplied on request.

## Stucco and Plaster

Plastering directly upon the Haydite Units is approved practice in exterior wall units of 8" or more in thickness and in all partitions. To insure proper results there should be no through mortar joints in the wall, as these, if present, conduct moisture through the wall. The units themselves will not conduct moisture through the wall because of their very low capillarity. In accordance with ordinary good masonry and plastering practice, the Haydite Unit wall should be clean and thoroughly dried out and before applying the scratch coat the surface should be dampened evenly to control suction. The scratch coat should be trowelled on hard and tight, being forced into surface depressions to give a permanent bond. Owing to the trueness of the Haydite Wall, this first coat usually may be quite thin. On these and other points the standard plastering and stuccoing practice as recommended by the Portland Cement Association should be followed for dependable results. Haydite Units as a plaster base will be found to speed up the work and to effect a saving in the amount of plaster needed.

## Nailing

Haydite Units are readily nailable and save carpenter's time in locating and placing plugs and strips in the wall. Wood trim, blocks, etc., can be easily and securely nailed directly to the units.

## Cutting and Channelling

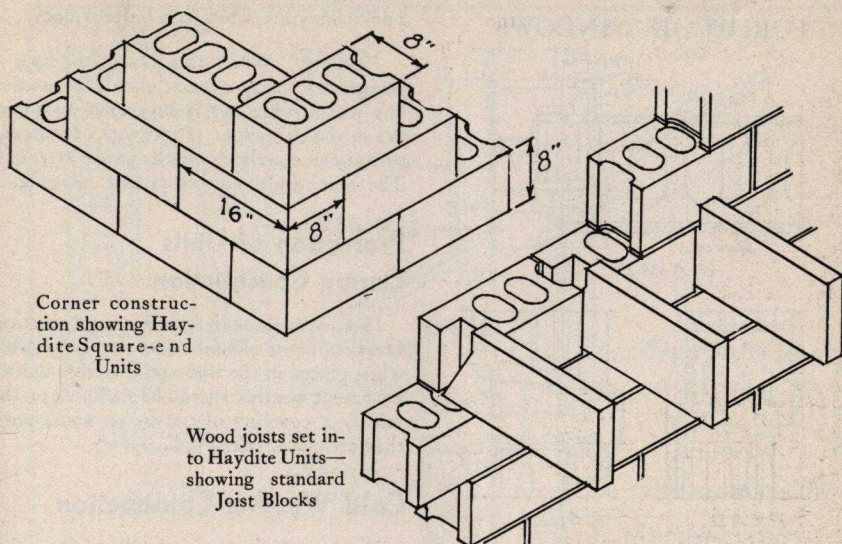
The units are easily cut or channelled to receive pipes, conduits, etc., and due to the toughness of the units this can be done without danger of damage. The range of unit sizes available makes cutting seldom necessary, however.

## Unplastered Acoustical Walls

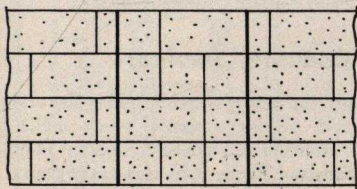
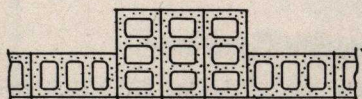
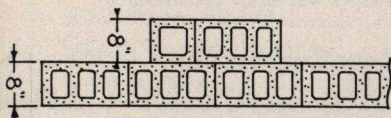
No special construction is used—the standard units are used, and for good appearance, the mortar joints are



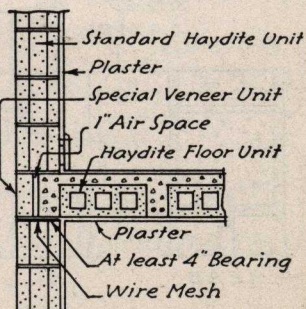
# CONSTRUCTION DETAILS



## PILASTER



## CONCRETE SLAB FLOOR BEARING ON HAYDITE BUILDING UNIT WALL

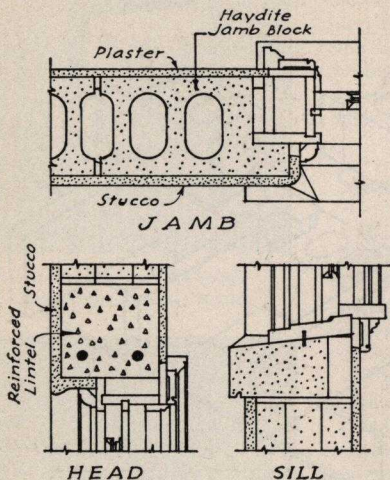


Showing Tile Joist Floor Construction with Haydite Lightweight Floor Units

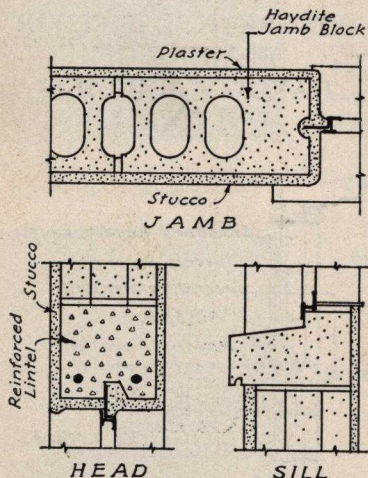


# Window Details

## FOR WOOD WINDOWS



## FOR STEEL WINDOWS



NOTE: The two above details show construction applying to walls with stucco exteriors, using standard Haydite Jamb Blocks and Grooved Blocks. For walls faced with brick or stone, Haydite Square-end units are used and construction is the same as with other masonry backup materials.

Page Fourteen

neatly pointed up. Ashlar units are also supplied which increases the interest of the wall, and when desired special colored or buffed Haydite Units can be provided.

**Painting.** When this is to be done a recognized concrete paint should be used—one which, when set, is impervious to water, fire or the elements. (Paint with oil, turpentine or commercial dryers should be avoided). The best results are secured by spraying.

## Protection of Units During Construction

In accordance with standard good practice, Haydite Units should be as dry as possible when placed in the wall and therefore during inclement weather should be sheltered on the job by a covering of canvas or wood, until they are placed in the wall.

## Cold Weather Construction

Haydite Units are excellent for cold-weather building operations. They require no special treatment and the use of what is considered to be good standard masonry practice will insure good results.

## Floor Construction

As the sizes and shapes of Haydite Floor Units vary according to locality, construction data will be supplied by your local manufacturer.

## Haydite Concrete

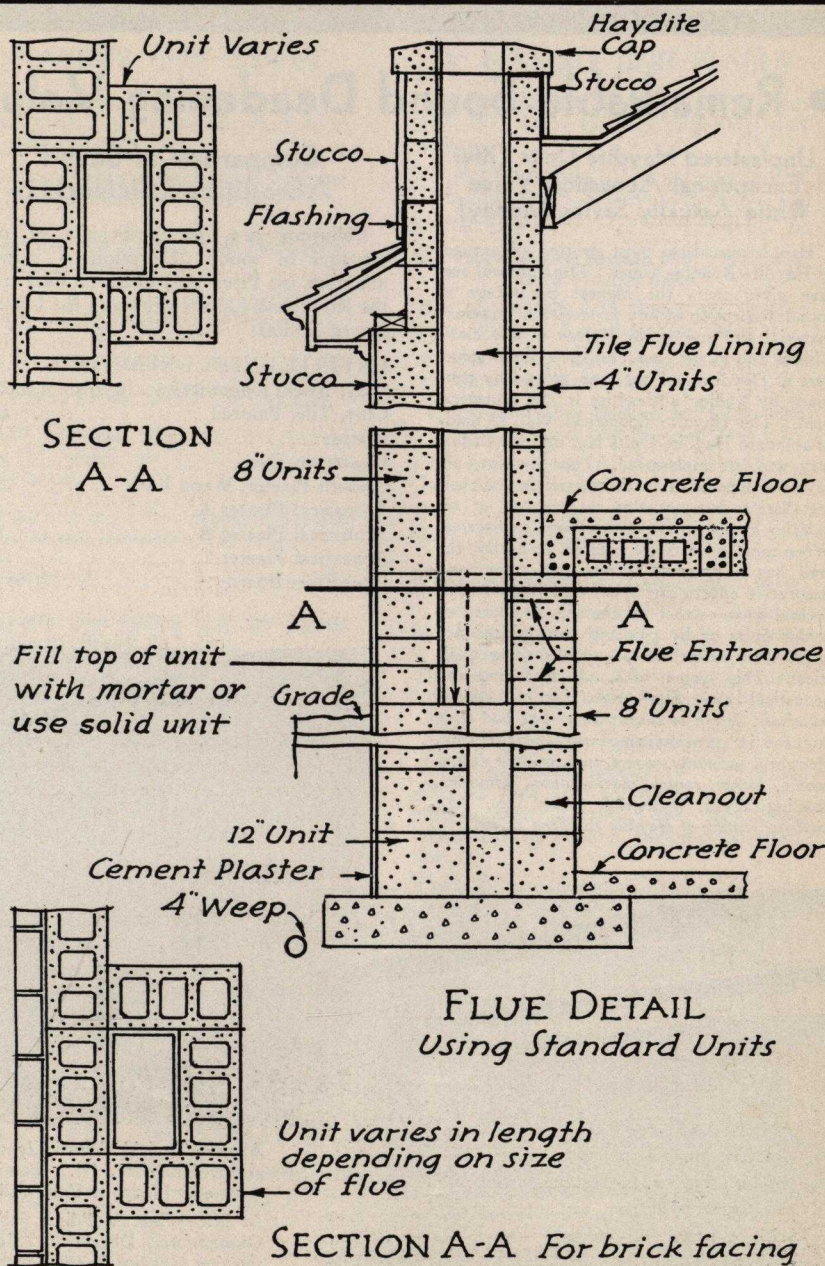
The uses of Haydite Lightweight Structural Concrete is a special subject not covered in this book. Full data and construction information will be supplied by the local Haydite manufacturer.

## Engineering Services

Both the manufacturers of Haydite and the concrete products plants which make the units offer the services of competent Haydite specialists. These men can supply any required information about Haydite Products and their performance and can assist you in working out any unusual construction problems.



# CONSTRUCTION DETAILS





# **HAYDITE** The Lightweight Aggregate **BUILDING UNITS**

**John H. Black Company**

505 Delaware Avenue, BUFFALO, N. Y.

*Licensed Manufacturers of Haydite—the Lightweight Aggregate*

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